

Action Plan

Managing Sewage From Boats

Problem

Information developed through the Buzzards Bay Project and monitoring conducted by the Department of Environmental Protection (DEP) indicates that sewage from boats is probably being discharged regularly in the nearshore waters of Buzzards Bay, particularly in and around marinas. The boat sewage itself, as well as chemicals used to deodorize and disinfect the sewage, are believed to be degrading water quality and potentially affecting resource areas — such as shellfish beds. The major products used as chemical additives are alcohol, formaldehyde, zinc salts, ammonium salts and chlorine. A survey of harbor masters indicates that alcohol and formaldehyde are the most common chemicals used in Buzzards Bay waters in Type III MSDs. High concentrations of formaldehyde in discharges represent a potential health threat to bathers and a threat to the environment.

Approximately 11,000 boats are docked or moored in embayments around Buzzards Bay. However, only about 11 publically available boat pumpout facilities exist for the entire Bay (Figure 5.7). Moreover, in most cases these facilities are so significantly underutilized that their presence is immaterial.

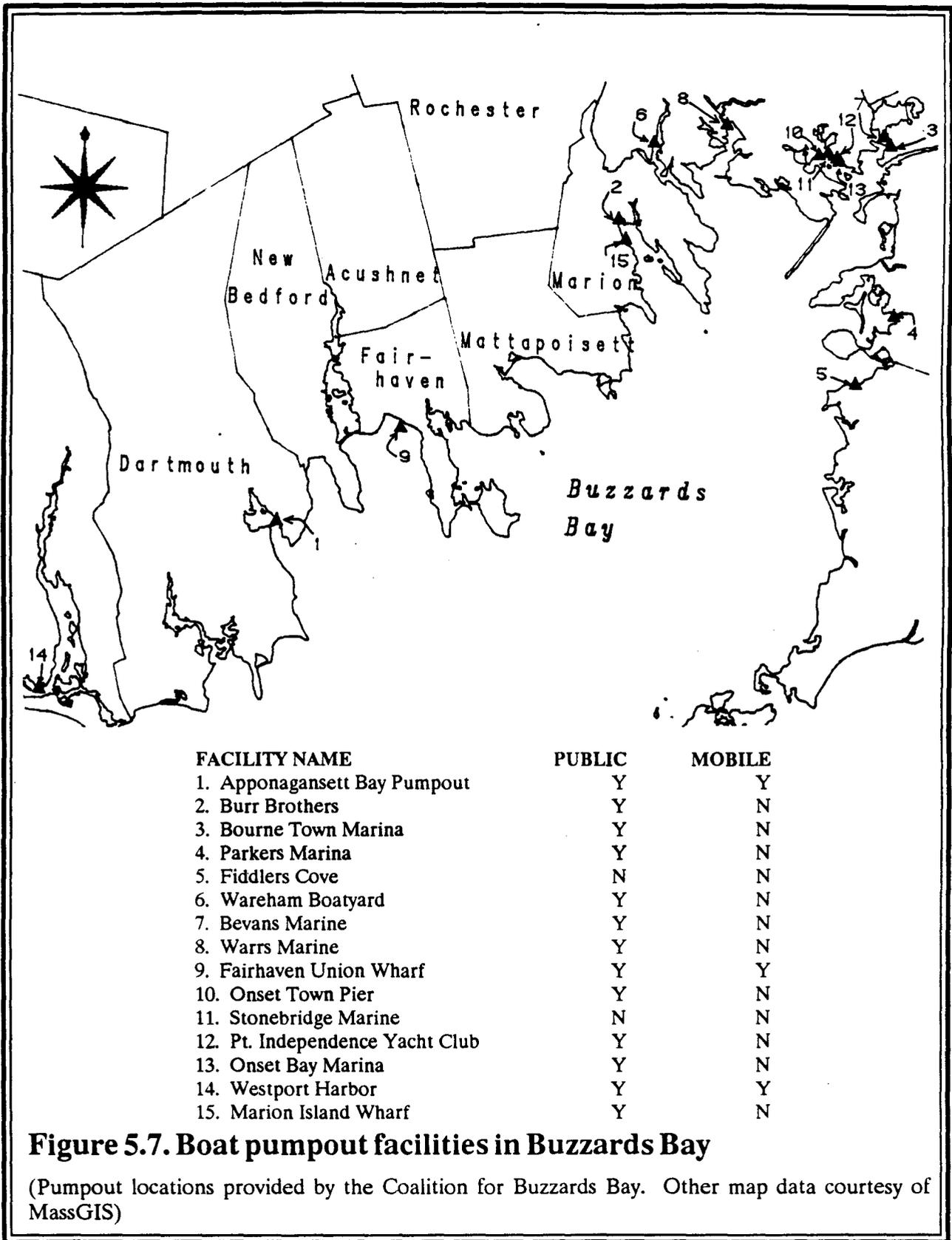
Data on the extent of the boat sewage problem are sketchy due to the difficulty in conducting monitoring programs to document this transient pollution source. A Maryland study documented the water quality conditions in a shallow embayment before and after a major boating weekend in July 1978. Fecal coliform per 100 milliliters in and around the marina increased from a range of 3-28 before the boats arrived to a range of 7-68 after they left.

The Marine Policy Center at Woods Hole Oceanographic Institution conducted similar work in Edgartown Harbor at Martha's Vineyard over the 4th of July weekend in 1989. This study shows highest levels of fecal coliform during peak boating activity (Gaines, 1990).

Background

Many of the boats in Buzzards Bay have installed marine heads (toilets); many others have uninstalled removable portable heads. The Federal Water Pollution Control Act Amendments of 1972 (FWPCA) authorize the Coast Guard to regulate marine head discharges from vessels with installed heads. Unfortunately, the Coast Guard does not have the necessary personnel to enforce the law. The Commonwealth has the authority to regulate discharges from vessels that use uninstalled heads such as port-a-potties. Through Title 5 of the State Sanitary Code, the DEP prohibits the discharge of wastes from these temporary marine heads into marine and freshwater. However, due to inadequate staffing, the DEP Division of Water Pollution Control is unable to enforce the law.

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Marine heads installed on boats of 65 feet or less must be serviced by one of three types of marine sanitation devices (MSDs). Type I and Type II MSDs macerate and disinfect waste with chlorine, formaldehyde or other disinfectants. The Type I MSD treats the waste to a level not to exceed 1000 fecal coliform/100 ml and the Type II MSD treats to a level not to exceed 200 fecal coliform/100 ml and 150 mg/l suspended solids. Type III MSDs are holding tanks to prevent discharge of sewage near shore. These systems typically use formaldehyde, alcohol, or both, primarily to deodorize waste while it is stored in the holding tank. Boats larger than 65 feet, must use Type II or Type III MSDs. Types I and II MSDs are permitted under the FWPCA to discharge into all coastal waters. Type III MSDs are fitted with piping to enable sewage discharge, but this discharge is prohibited in marine waters within 3 miles of shore or within the territorial sea which includes all of Buzzards Bay. Nonetheless, it is widely believed that discharge nearshore and in harbors does occur. Several harbormasters and boat dealers believe that Type I and Type II systems are not widely sold today and that most new boats are installed with Type III MSDs.

Marine heads that are not installed in the vessel are typically portable, self-contained units that have holding capacities of 2 to 5 gallons. These units can be carried on or off boats for proper disposal into toilets but can also be easily (and illegally) emptied overboard. These systems use little water for flushing and therefore only collect human wastes and whatever deodorizing/disinfecting chemicals are added by the boat operator. Some Buzzards Bay harbor masters have estimated that these systems are most often used on boats between 18 and 26 feet.

The state has the authority to require all marinas to install and maintain pumpout facilities through the annual permit process in Chapter 91 regulations. The DEP's Division of Wetlands and Waterways (DWW) is responsible for enforcing Chapter 91 provisions. The state also has authority to develop design standards for pumpout facilities. The DWW often requires a pumpout facility when a marina seeks a construction permit, however because of a lack of design standards and personnel shortages, DWW does not currently enforce the annual permit requirements.

The use of existing pumpouts at either private or public marinas is usually very low. The reasons revolve around convenience, cost, education, and enforcement. Many boaters find it more convenient to dump their wastes into marine waters than to invest time and effort into getting their boats to the pumpout facility. Others think that the cost of a pumpout is excessive, even though it is typically less than \$10. Moreover, some boaters do not feel that boat waste seriously degrades water quality, or they believe that their incremental addition does not make a difference.

In 1989, the Executive Office of Environmental Affairs formed a Task Force to develop a policy on issues surrounding boat sewage collection and disposal. The Task Force met several times to consider issues such as increasing the number and availability of pumpout facilities; proper disposal of sewage from boat pumpout facilities, how shellfish and swimming areas should coexist with marinas; and the creation of no-discharge zones. The Task Force has identified the regulatory and management issues that need to be addressed and are working with DEP to develop solutions.

The Buzzards Bay Project through demonstration projects and other funding has assisted the communities of Westport, Dartmouth, Fairhaven, Mattapoisett, and Marion in purchasing and installing mobile and land based boat pumpout facilities.

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The Coalition for Buzzards Bay has provided a valuable boater education component to this effort through its "Handbook for Mariners of Buzzards Bay". These efforts along with the municipal agreements to maintain and enforce pumpouts and their use has allowed great progress to be made in managing boat sewage in Buzzards Bay.

Major Issues

Disposal of boat sewage once it is removed from vessels is often an obstacle in siting boat pumpout facilities. Few marinas in Buzzards Bay are tied into public sewer systems. In addition, recent DEP policy specifies that boat waste cannot be disposed of in a septic system. This regulation is based on the possibility of failure in the performance of the septic tank, as well as the potential of groundwater contamination. As a result, most sewage pumped from boats will be stored in tight tanks and then transferred to treatment works for ultimate disposal. Three major problems emerge: (1) formaldehyde that now must be disposed of at the treatment plant may not be diluted (as it would be if carried through a sewer system) and some contend that it will interfere with the treatment process (2) during peak flows, particularly in the summer, local treatment plants may lack the capacity to accept any additional sewage and; (3) pumpout facilities are often far from the nearest treatment plant, which makes hauling of the boat sewage expensive.

A successful boat pumpout program is a major undertaking that demands the full commitment of the harbormaster, the board of health, and the shellfish warden. It requires a comprehensive program with equal parts public education and enforcement. This type of total townwide dedication and cooperation is necessary to generate the ingredients for a successful program. Grass roots support for action was also an important ingredient in the initiation of some programs.

The Division of Marine Fisheries prohibits shellfishing in the areas beneath marinas and in buffer zones around marinas. The buffer area size depends upon the number of boats and a specific dilution ratio. It is critical that Buzzards Bay towns work with DMF in developing data on water quality and pumpout utilization to minimize the size of the buffer zones around marinas. The towns, through more effective planning and management, should address and minimize the inherent conflicts between these two uses of coastal waters.

Goal

Eliminate the discharge of wastewater from all boats in Buzzards Bay embayments.

Objectives

1. To build more pumpout facilities and to promote their use by educating boaters, making facilities more accessible, and enforcing the regulations.

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2. To develop financially self-sustaining pumpout programs at the town level.
3. To designate embayments in Buzzards Bay as no-discharge area.

CCMP Commitments

Department of Environmental Protection (DEP)

1. DEP, using its Chapter 91 permitting authority, will require new marinas or expansions of existing marinas (greater than 10 additional slips) to have adequate pumpout facilities.

Target date: Beginning 12/92.

2. DEP will implement a policy ensuring adequate management and treatment for sewage pumped from boats.

Target date: Beginning 1992.

3. DEP will implement a policy to eliminate toxic additives in marine sanitation devices.

Target date: 1991.

4. DEP will review problems of treating and disposing of boat sewage.

Interim Action: DEP, with assistance from EPA, will continue to provide technical assistance and oversight to the town of Marion in developing advanced boat sewage treatment technology now being tested at a pilot project at the town's wastewater treatment facility.

Coastal Zone Management Office (CZM)

1. CZM and DEP will develop a program that ensures adequate pumpout facilities for all harbor areas.

Target Date: 12/92.

2. CZM and the U.S. Environmental Protection Agency (EPA) will assist Buzzards Bay municipalities to develop a strategy for designating EPA "no discharge areas" within coastal embayments. The Buzzards Bay Project and the Buzzards Bay Action Committee will work with municipalities to encourage construction of boat pumpout facilities as well as the delineation of no discharge areas in Buzzards Bay.

Target date: 1992

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3. CZM, under its Coastal Facilities Improvement Program, will give serious consideration to eligible projects that propose to construct municipal marine pump-out facilities where needed and appropriate.

Target date: 1991

Environmental Protection Agency (EPA)

EPA, under the Clean Water Act, will designate an embayment in Wareham as a no-discharge area.

Target date: 12/91

Buzzards Bay Municipalities

Dartmouth, Westport, Marion, Mattapoisett, and Fairhaven, with grants from the Buzzards Bay Project, will provide mobile or land based boat pumpout facilities and develop management plans for ensuring their use.

Target date: 7/91

Other Recommended CCMP Actions

Boards of Health and Harbormasters should enforce the use of pumpout facilities by all boaters using Type III MSD's or portable toilets in Buzzards Bay embayments.

Target date: 1993.

The Buzzards Bay Project, as part of its municipal grants for boat pumpout construction, will encourage municipalities to have an enforcement component to their boat pumpout programs.

Implementation Costs

For communities that wish to implement a pumpout program immediately, the most appropriate revenue source is through the yearly mooring permit fee or marina fee. To facilitate usage, each boat owner could be required to pay a deposit at the time of mooring registration. The amount of the deposit would be based on the estimated number of pumpouts needed for the season, and money would be refunded to the facility as pumpouts occur. See Financial Plan, Chapter 2 (Boat Pump-out Facilities) for implementation costs, and for additional revenue options.

Another option would be for the funds to be used by the municipalities to operate a pro-active pumpout program where pumpouts are free upon demand.